AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE	OF	PAGES
	1		2

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. *(If applicable)*
0001	05/15/03		

6. ISSUED BY CODE

U.S. Army Engineer District, Wilmington
69 Darlington Avenue (28403)
Post Office Box 1890 (28402-1890)
Wilmington, North Carolina

7. ADMINISTERED BY *(If other than Item 6)* CODE

8. NAME AND ADDRESS OF CONTRACTOR *(No., street, county, State and ZIP Code)*

(X)	9A. AMENDMENT OF SOLICITATION NO.
X	DACW54-02-B-0020
	9B. DATED *(SEE ITEM 11)* 04/25/03
	10A. MODIFICATION OF CONTRACT/ORDER NO.
	10B. DATED *(SEE ITEM 11)*

CODE FACILITY CODE

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☒ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☒ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing items 8 and 15, and returning 2 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment your desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA *(If required)*

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	
	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: *(Specify authority)* THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES *(such as changes in paying office, appropriation date, etc.)* SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER *(Specify type of modification and authority)*

E. IMPORTANT: Contractor ☐ is not, ☐ is required to sign this document and return ——— copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION *(Organized by UCF section headings, including solicitation/contract subject matter where feasible.)*

IFB NO. DACW54-02-B-0020...Wilmington Harbor, NC 96 ACT Clean Sweep, Horseshoe Shoal Channel Sta 00+00 thru Baldhead Shoal Channel Sta 270+00 Dredging, New Hanover and Brunswick Counties, NC is amended as follows:

VOMUME 1

a. **SECTION 01100**: Delete existing Attachment 1 - Index of Drawings and substitute enclosed revised page.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER *(Type or print)*		16A. NAME AND TITLE OF CONTRACTING OFFICER *(Type or print)*	
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
(Signature of person authorized to sign)		*(Signature of Contracting Officer)*	

14. DESCRIPTION OF AMENDMENT -- Cont'd

b. **SECTION 02325**:

(1) Delete existing SECTION Page 1 thru Page 28 in their entirety and substitute enclosed revised Page 1 thru Page 24.

(2) Delete Table 1 TEXT Table and substitute enclosed revised page.

NOTE:
Text that is added or revised by this amendment is replaced in its entirety and underlined printed in bold and/or stamped appropriately.

The text changes may have necessitated reformatting of subsequent text or pages. If this is the case, those pages have also been issued as amended pages but are not underlined with bold text.

c. **DRAWING**:

(1) Delete existing Plate Nos. P-1, P-26, and P-28 through P-36 in their entirety and replace with enclosed liked-numbered revised Plates.

(2) Add Reference Drawings R-23 through R-29 in their entirety.

Encls
As stated

ATTACHMENT 1

INDEX OF DRAWINGS

		WILMINGTON HARBOR CLEAN SWEEP	
Plate No.	*Sheet No.*	*Title*	*Dgn File*
P-1	1	INDEX OF DRAWINGS	clswpindx
P-2	2	LOCATION MAP	clswploc
P-3	3	HORSESHOE SHOAL CHANNEL	horchncs
P-4	4	HORSESHOE SHOAL BORING LOCATIONS AND TOP OF ROCK CONTOURS	hortorcs
P-5	5	SNOWS MARSH CHANNEL STA 0+00 TO 50+00	snomshchncs
P-6	6	SNOWS MARSH CHANNEL STA 50+00 TO 157+75.12	snomshchncs
P-7	7	SNOWS MARSH CHANNEL BORING LOCATIONS AND TOP OF ROCK CONTOURS STA 0+00 TO 50+00	snomtorcs
P-8	8	SNOWS MARSH CHANNEL BORING LOCATIONS AND TOP OF ROCK CONTOURS STA 50+00 TO 157+75.12	snomtorcs
P-9	9	LOWER SWASH CHANNEL	lswhchncs
P-10	10	LOWER SWASH CHANNEL BORING LOCATIONS AND TOP OF ROCK CONTOURS	lswhtorcs
P-11	11	FERRY SLIP ISLAND DISPOSAL AREA	ferryslip
P-12	12	SOUTH PELICAN ISLAND DISPOSAL AREA	spelican
P-13	13	BATTERY ISLAND CHANNEL	batlchncs
P-14	14	BATTERY ISLAND CHANNEL BORING LOCATIONS AND TOP OF ROCK CONTOURS	batltorcs
P-15	15	SOUTHPORT CHANNEL	sptchncs
P-16	16	SOUTHPORT CHANNEL BORING LOCATIONS AND TOP OF ROCK CONTOURS	spttorcs
P-17	17	BALDHEAD - CASWELL CHANNEL	bcaschncs
P-18	18	BALDHEAD - CASWELL CHANNEL BORING LOCATIONS AND TOP OF ROCK CONTOURS	bcastorcs
P-19	19	SMITH ISLAND CHANNEL	smhlchncs
P-20	20	SMITH ISLAND CHANNEL BORING LOCATIONS AND TOP OF ROCK CONTOURS	smhltorcs
P-21	21	BALDHEAD SHOAL CHANNEL STA 0+00 TO 85+00	nbhschncs
P-22	22	BALDHEAD SHOAL CHANNEL STA 85+00 TO 215+00	nbhschncs
P-23	23	BALDHEAD SHOAL CHANNEL STA 215+00 TO 270+00	nbhschncs
P-24	24	BALDHEAD SHOAL CHANNEL BORING LOCATIONS AND TOP OF ROCK CONTOURS STA 0+00 TO 85+00	nbhstorcs
P-25	25	BALDHEAD SHOAL CHANNEL BORING LOCATIONS AND TOP OF ROCK CONTOURS STA 85+00 TO 215+00	nbhstorcs
P-26	26	BALDHEAD SHOAL CHANNEL BORING LOCATIONS AND TOP OF ROCK CONTOURS STA 173+00 TO 191+00	borecluster1
P-27	27	BALDHEAD SHOAL CHANNEL BORING LOCATIONS AND TOP OF ROCK CONTOURS STA 215+00 TO 270+00	nbhstorcs
P-28	28	BEACH FILL AREA BALDHEAD ISLAND SOUTH STA 51+00 TO 46+00	baldhead83a
P-29	29	BEACH FILL AREA BALDHEAD ISLAND SOUTH STA 76+00 TO 100+00	baldhead83a
P-30	30	BEACH FILL AREA BALDHEAD ISLAND SOUTH STA 100+00 TO 125+00	baldhead83a
P-31	31	BEACH FILL AREA BALDHEAD ISLAND SOUTH STA 125+00 TO 141+00	baldhead83a
P-32	32	BEACH FILL AREA CROSS SECTIONS STA 51+00 TO 68+00	bhxsecta
P-33	33	BEACH FILL AREA CROSS SECTIONS STA 72+00 TO 92+00	bhxsecta
P-34	34	BEACH FILL AREA CROSS SECTIONS STA 96+00 TO 116+00	bhxsecta
P-35	35	BEACH FILL AREA CROSS SECTIONS STA 120+00 TO 140+00	bhxsecta
P-36	36	BEACH FILL AREA CROSS SECTIONS STA 144+00 TO 149+00	bhxsecta
P-37	37	NEW OCEAN DREDGED MATERIAL DISPOSAL SITE (ODMDS)	newodmdscs
P-38	38	DISPOSAL AREA No. 4 (ALTERNATE SITE)	da4postsur
		Reference Drawings	
R-1		LOWER SWASH CHANNEL	lswh025
R-2		SNOWS MARSH 50+00 - 157+75	snm135cs
R-3		SNOWS MARSH 0+00 - 50+00	snm135cs
R-4		HORSESHOE SHOAL	hss133cs
R-5		BALDHEAD SHOAL CHANNEL STA 30+00 - 80+00 REACH 3	nbhs0911
R-6		BALDHEAD SHOAL CHANNEL STA 0+00 - 85+00 REACH 1 AND 2	nbhs0813
R-7		BALDHEAD SHOAL CHANNEL STA 0+00 - 85+00 REACH 1 AND 2	nbhs0620
R-8		BALDHEAD SHOAL CHANNEL STA 0+00 - 85+00 REACH 1 AND 2	nbh0502
R-9		BALDHEAD SHOAL CHANNEL STA 345+00 - 355+00	nbhs199
R-10		BALDHEAD SHOAL CHANNEL STA 85+00 - 215+00	nbhs199
R-11		BALDHEAD SHOAL CHANNEL STA 85+00 - 130+00 REACH 3	nbhs0911
R-12		BALDHEAD SHOAL CHANNEL STA 85+00 - 130+00 REACH 3	bhs0528
R-13		BALDHEAD SHOAL CHANNEL STA 85+00 - 130+00 REACH 3	nbh30522
R-14		BALDHEAD SHOAL CHANNEL STA 85+00 - 130+00 REACH 3	bhs0606
R-15		BALDHEAD SHOAL CHANNEL STA 85+00 - 130+00 REACH 3	nbs0730
R-16		BALDHEAD SHOAL CHANNEL STA 0+00 - 85+00 REACH 1 AND 2	nbs0730
R-17		BALDHEAD SHOAL CHANNEL STA 30+00 - 80+00 REACH 1 AND 2	nbhs290
R-18		BALDHEAD SHOAL CHANNEL STA 30+00 - 60+00 REACH 1	bhs1029
R-19		SMITH ISLAND CHANNEL	sml0912
R-20		BALDHEAD - CASWELL CHANNEL	cas0226
R-21		SOUTHPORT CHANNEL	spt031ad
R-22		BATTERY ISLAND CHANNEL	bat0221
R-23		BALDHEAD SHOAL CHANNEL 120+00 - 185+00	bhs09ad
R-24		BALDHEAD SHOAL CHANNEL 155+00 - 220+00	bhs129ad
R-25		BALDHEAD SHOAL CHANNEL 190+00 - 215+00	nbh121ad
R-26		BALDHEAD SHOAL CHANNEL 215+00 - 222+00	nbh121ad
R-27		BALDHEAD SHOAL CHANNEL 220+00 - 270+00	bhs094ad
R-28		BALDHEAD SHOAL CHANNEL 260+00 - 290+00	bhs099ad
R-29		BALDHEAD SHOAL CHANNEL 280+00 - 320+00	bhs092ad

(Revised by Amendment No. 0001)

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02325

DREDGING, BEACH-FILL WORK, AND ISLAND DISPOSAL WORK

-- End of Section Table of Contents --

SECTION 02325

DREDGING, BEACH-FILL WORK, AND ISLAND DISPOSAL WORK

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

(a) The work consists of furnishing plant, labor, materials, and equipment to perform dredging and associated work as required by these specifications and the schedules and drawings forming parts thereof, for Wilmington Harbor, NC 96 ACT Clean Sweep, Horseshoe Shoal Channel Sta. 00+00 thru Baldhead Shoal Channel Sta 270+00.

(b) The depth, bottom widths and lengths to be dredged are shown on the drawings. The Contractor shall remove sufficient material to provide the limiting depth and side slopes shown on the drawings. The depth, bottom widths and lengths to be dredged are based on the bottom conditions existing on the date of the contract survey and are subject to change based on the bottom conditions at the time of the before dredge survey.

(c) **Materials to be dredged in Reach 3 of Baldhead Shoal Channel will be disposed of in new ODMDS.**

(d) The work consists of placing beach quality sand along the area of beach on Baldhead Island South and constructing the beach fill sections as shown on the plans along the length of beach as identified on the plans. Dredged material not considered suitable for beach fill will be disposed of in new ODMDS indicated on the plans and in accordance with this section of the specifications.

(e) The work consists of placing beach quality sand from channels above Battery Island Channel on two bird islands as shown on the plans. Material exceeding that capable of being disposed of on the bird island will be disposed of in Disposal Area No. 4 as shown on drawings.

1.2 WORK COVERED BY CONTRACT PRICE

The contract price per cubic yard for dredging as listed for "Wilmington Harbor Channels" (borrow area measurement) of the BIDDING SCHEDULE shall include the cost of all plant, material, supplies, labor, and incidental expenses in connection with the excavating, transporting, disposal in new ODMDS, placing and shaping the island disposal, and placing and tilling the beach fill material; temporary safety fencing, temporary warning signs, all diking, embankments, temporary bulkheading needed for control and confining the material and discharge fluid; surveys for the layout and control of the dredging work and for the beach fill work and new ODMDS surveys described in SECTION 01100: SUPPLEMENTARY SPECIAL CONTRACT REQUIREMENTS, paragraph, BEACH SURVEYS AND SURVEY PERSONNEL, repairs, and its final inspection and acceptance. The Contractor shall be required to place the beach fill in accordance with the drawings.

(a) The contract price per cubic yard for dredging includes the cost of removal and disposal of all dredged material. Included is cost for disposal of unsuitable material for beach fill into new ODMDS and unsuitable material for bird island disposal into upland disposal area indicated on plans.

(b) The contract price per cubic yard for dredging includes all costs

associated with labor, equipment, and materials required for proper placement of dredged material in accordance with these specifications until dredging operations have been completed.

(c) All costs associated with the turtle observers, shortnose sturgeon observers, marine mammal observers, including room and board throughout the entire project, shall be included in the contract price per cubic yard for dredging.

(d) The lump sum for mobilization and demobilization shall include all costs associated with the operations.

1.3 ORDER OF WORK

It is the government's intention to provide, at a minimum, one way traffic for vessels by 15 December 2003. The Contractor should plan its operations to enable continuous deep water passage for commercial navigation to required depth and minimum of 400-foot wide clear channel for entire contract length, and then complete all remaining contract channel requirements by contract completion date.

1.3.1 Dredging

If the work is accomplished by pipeline dredge or mechanical dredge (clamshell, dragline, or dipper), the Contractor shall begin work at one end of acceptance section and proceed to the opposite end of the work area. The Contractor shall not work in more than 3 adjoining acceptance sections at any given time. Before proceeding to an additional adjoining acceptance section, work must be completed to the full project depth within at least one of the three previous adjoining acceptance sections.

If the work is to be accomplished by hopper dredge, the Contractor shall submit a dredging plan to the Contracting officer for approval prior to commencement of dredging. The dredging plan shall include an order of work which begins at one end of acceptance section and proceeds to the opposite end of the work area. The Contractor shall not work in more than 4 adjoining acceptance sections at any given time. Before proceeding to an additional adjoining acceptance section, work must be completed to the full project depth within at least one of the four previous adjoining acceptance sections.

If the work is accomplished by a combination of hopper dredge and other types of dredging equipment (pipeline dredge or mechanical dredge), the Contractor shall submit a dredging plan to the Contracting Officer for approval prior to commencement of dredging. The dredging plan shall include an order of work where each piece of dredging equipment completes acceptance sections in an orderly manner progressing in one direction. Work by hopper dredge shall not occur in more than 4 adjoining acceptance sections at any given time and work by other dredging equipment shall not occur in more than 3 adjoining acceptance sections at any given time. For hopper dredge work, before proceeding to an additional adjoining acceptance section, work must be completed to the full project depth within at least one of the four previous adjoining acceptance sections. For other types of dredging equipment, before proceeding to an additional adjoining acceptance section, work must be completed to the full project depth within at least one of the three previous adjoining acceptance sections.

1.3.2 Beach Fill

Placement of the beach fill on Baldhead Island South Beach shall begin at the west end of the project (STA 51+00), and placement shall continue until material is removed from the channels as indicated on plans and

specifications.

1.4 CHARACTER OF MATERIALS

The material to be removed is predominantly composed of shoaled material which has occurred since the various areas were last dredged. The shoaled materials are believed to consist primarily of sand, hard sand, silt and clay, but also include wood, metal, and other sunken debris that may have become lodged in the channel. The new work is believed to consist of primarily of sand, dense sand, silt, clay, wood, cemented sand, silt and clay, and sedimentary rock with high compressive strength. For definitions of materials, see Geotechnical Manual, DM 1110-1-1, latest edition. See attached (drilling) logs and laboratory data. See also site specific information paragraphs of this section and reference drawings.

1.5 NOTICES

(a) The Contractor shall give the Contracting Officer five (5)days advance written notice before commencing work.

(b) The Contractor shall be responsible for requesting Government before-dredging surveys, in writing five (5) days prior to beginning work in an acceptance section.

(c) The Contractor shall also be responsible for requesting the Government after-dredging surveys. The Government will conduct after-dredging surveys, within three (3) working days of a written request from the Contractor.

1.6 NAVIGATION AIDS

There may be aids to navigation within the project boundaries. Some, or all, of such aids to navigation may need to be removed for the accomplishment of the contract work. It is the responsibility of the Contractor to timely determine any need for moving of aids to navigation and to coordinate with the U.S. Coast Guard (USCG) and any other responsible parties to accomplish any needed movement. Any impacts to the work due to the inability of the Contractor to accomplish any needed movement of aids to navigation will not be the responsibility of the United States Government or of the Contracting Officer.

1.7 MISPLACED MATERIAL

Any material, including material lost through leaks in the pipelines, that is deposited or allowed to flow elsewhere than in places designated or approved by the Contracting Officer will be considered as misplaced material. If, in the opinion of the Contracting Officer, this misplaced material will in any way be a hazard to navigation, to normal activities of the public, or to the environment, the Contractor shall remove such misplaced material and deposit it where directed at the Contractor's expense. Misplaced material includes dredged material deposited outside the specified new Ocean Dredged Material Disposal Site (ODMDS) disposal zone, any dredged material mounded higher than elevation -30 feet MLLW within the disposal zone, and any dredged material placed outside the tolerances as specified for the beach fill sections.

1.8 SUBMITTALS

The following shall be submitted to the Contracting officer in accordance with Section 01330 SUBMITTAL PROCEDURES:

a. Disposal Operation Plan; G.

b. Turtle deflector device design (required if hopper dredge is to be used to accomplish the work); G

c. Inflow basket or screen design (required if hopper dredge is to be used to accomplish the work); G

d. Dredge material disposal plan; FIO

e. Ocean disposal verification data; FIO

f. Dredging Plan; FIO

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 DREDGE POSITIONING SYSTEM

Each dredge shall be equipped with an electronic positioning system, capable of positioning the dredge in the channel with accuracies equal to contract payment surveys (Class 1), as specified in the U.S. Army Corps of Engineers, latest Publication Number EM 1110-2-1003, Title: Engineering and Design - Hydrographic Surveying. This positioning system shall be established, operated, and maintained by the Contractor during the entire period of the contract. The positioning system shall be used to precisely locate the dredge and shall be capable of displaying and recording the dredge's location in an acceptable coordinate system which can be related to, or is directly based on, the North Carolina Lambert State Plane Coordinate System. Navigation channel control, and shore station control, if required, will be provided to the Contractor in the same North Carolina Coordinate System prior to the commencement of work. It shall be the responsibility of the Contractor to have the positioning/navigation system reviewed and inspected by the Contacting Officer's Representative prior to the commencement of work.

3.2 QUANTITIES SUMMARY

The quantities listed in the table below include the volumes present at the time of the surveys indicated in the contract drawings, plus anticipated shoaling before dredging begins.

Acceptance Sections	Total Cubic Yards to Required Depth	Total Including Allowable Overdepth
Horseshoe Shoal[1] (Sta 120+00 to 260+00)	25,000(42')	60,000(44')
Snow's Marsh[1]	60,000(42')	150,000(44')
Lower Swash[1]	15,000(42')	40,000(44')
Battery Island[2]	10,000(44')	20,000(46')
Southport[2]	10,000(44')	20,000(46')
Baldhead Caswell[2]	5,000(44')	10,000(46')
Smith Island[2]	300,000(44')	450,000(46')

Acceptance Sections	Total Cubic Yards to Required Depth	Total Including Allowable Overdepth
Baldhead Shoal[2] 00+00 to 45+00	150,000(44')	200,000(46')
Baldhead Shoal[2] 45+00 to 88+00	90,000(44')	200,000(46')
Baldhead Shoa1[3] 88+00 to 270+00	2,000,000(45')	3,000,000(47')

NOTE:

[1]Disposal to South Pelican Island and Ferry Slip Island until filled to capacity (DA #4 is alternate site for additional material after filling of islands and any unsuitable material)

[2]Disposal to Baldhead Island South Beach (unsuitable material to new ODMDS)

[3]Disposal to ODMDS (additional foot of required depth because of nature of material to facilitate future maintenance dredging)

3.3 ENVIRONMENTAL WINDOWS

See SECTION 01355, ENVIRONMENTAL PROTECTION, for environmental windows.

3.4 LOCAL OFFICE

The Contractor shall maintain a land based office in the immediate vicinity of the project. This office shall be equipped with at least one operable telephone and fax machine, which provides both local and long distance service. The number for this equipment shall be provided to the Contracting Officer's Representative during the preconstruction conference, and the telephone shall be monitored and answered by contractor personnel during working hours.

3.5 OVERDEPTH AND SIDE SLOPES

3.5.1 Overdepth

This contract allows overdepth dredging. No payment will be made for any material that is removed from below the allowable overdepth or outside of the indicated side-slopes.

3.5.2 Side-Slopes

Material actually removed within limits approved by the Contracting officer, leaving final side-slopes as indicated on drawings. Flatter slopes will not be paid for, whether accomplished by dredging the original position or the space below the pay slope plane and allowing up slope materials to fall into the cut.

3.5.3 Excessive Dredging

Material taken from beyond the limits as extended in provision, side-slopes above, will be deducted from the total amount dredged as excessive dredging and will not be credited.

3.6 REQUIRED TRANSPORTATION AND PIPELINE ROUTE

For surface vessel transportation of dredged material to the new Ocean Dredged Material Disposal Site (ODMDS) disposal zone and subsequent return trips to the work site, the vessel(s) shall be limited to the dredging limits and to the designated areas shown on the drawings. Pipeline routes to the Ocean Dredged Material Disposal Site (ODMDS) shall be restricted to the same areas required for surface vessel transportation.

3.7 PLACEMENT OF MATERIALS FOR BEACH FILL

3.7.1 General

3.7.1.1 Placement

The beach fill material shall be placed by discharging the material directly into the fill section from the dredge discharge pipe or by stockpiling the dredged material on the beach, in an area approved by the Contracting Officer, and hauling the material by wheeled or tracked earth moving equipment into the fill section. A combination of the above two methods may also be used. Except as provided for below, the dredged material shall be placed at the location and within the prescribed tolerances of the design sections as shown on the plans and in accordance with subparagraph, Tolerances, unless otherwise approved by the Contracting Officer. No material shall be placed unless an inspector appointed by the Contracting officer is present at the time, or has given his permission for the Contractor to proceed. The contractor shall be required to re-distribute any material that is deposited in places not designated or approved by the Contracting Officer. The Contractor shall be required to remove such misplaced material and deposit it where directed at his own expense. Avoid use of equipment to distribute material in close vicinity of dune crossovers; hand place and hand distribute material around crossovers.

3.7.1.2 Materials

The dredging shall be accomplished so that the most suitable material available for beach fill is placed within the prescribed section. This material should be predominantly of sand (SP, SP-SM, SM) grain size with no more than 10W (by weight) silt and clay (MH, ML, CH, OH, OL) material present. Material with more than 10% (by weight) silt and clay and organic materials and gravel, cobbles, and boulders are unsuitable for beach placement. The limits of the sand have been indicated on the contract plans. It is anticipated that the material within the entire channel prism and to the depth as noted on the plans, including the side slopes, contains suitable material for beach fill. Should the dredge encounter materials not suitable for placement on the beach, the Contractor will be directed by the Contracting Officer to move to a more satisfactory location within the indicated channel or dispose of the material within the designated area of the ODMDS. The Contractor will be directed by the Contracting Officer to dispose of the material dredged within the channel that are located outside the limits and below the depths indicated on the plans in the designated area of the new ODMDS.

3.7.1.3 Objectional Matter

Objectionable matter such as stumps, roots, logs, or other organic or inorganic debris having a diameter of 2 inches or more and/or a length of 1 foot or more, or accumulations of small vegetative growth or debris shall be collected and placed in a disposal area furnished by the Contractor and approved by the Contracting Officer as the work progresses. Objectionable matter such as large clay balls shall broken up and dispersed and/or mixed in with the beach fill section by scarifying or an appropriate method approved by the Contracting Officer.

3.7.2 Beach Fill

3.7.2.1 Discharge Points

When the fill material is placed by discharging the material in a controlled manner directly into the fill section, the dredge discharge points shall be manipulated and controlled by the Contractor in such a manner to minimize the loss of material into the surf zone.

3.7.2.2 Longitudinal Dikes

For beach fill material placed by discharging the material directly into the fill section, the Contractor shall provide temporary longitudinal dikes and spreader and pocket pipe as necessary to prevent gullying and erosion of the beach and fill and to retain the fill on the beach and within the limits of the fill cross section. Longitudinal dikes shall initially be 300 feet long in advance of filling operations. Shorter lengths may be subsequently used if approved by the Contracting Officer. Groins, bulkheads, revetments, piers, storm drain outfall pipes, walkover structures, and other structures within the fill section shall be protected by the Contractor to prevent damage thereof by the Contractor's operations. Any damages to any of the above items resulting from the Contractor's activities shall be at the Contractor's expense. If dredged material is to be stockpiled on the beach for hauling with wheeled or tracked equipment, the Contractor shall provide dikes, embankments, temporary bulkheading and spillways to confine the material within the approved stockpile areas. For stockpile areas, the material shall be confined shoreward of the seaward crest of the new top of berm elevation contour as indicated on the drawings for the particular beach fill site.

3.7.2.3 Fill Adjustments

It is the intent of the Contracting Officer to control the yardage of the fill material along the beaches to that which is needed to construct the applicable fill sections for the entire lengths of the beaches as shown on the drawings by varying the width of the top of the particular berm for each beach fill site. The distribution of the yardage along the beach, which is based on the design cross sections, the latest survey as of the date of these specifications, and the amount of material removed from the channel is tabulated on Table 1. Note that the amount of material retained on the beach is assumed to be 20% less than the volume of material removed from the channel. Periodic checks of the difference between the volume of material removed from the channel prisms and the amount of material retained on the beach will be made during the prosecution of the work. If the difference is found to be different from the assumed 20%, appropriated adjustments will be made in the retention volumes given in Table 1. The width of the top of the berm is shown on the drawings and is based on the quantity of material to be placed and an assumed slope of the placed material of 1V:15H seaward of the crest of the berm to the point of intersection with the existing bottom. The actual width of the berm needed to achieve the volumetric distribution given in Table 1 the beach fill berm will be based on Government interpretation of the channel and beach profile surveys and the actual slope that the material assumes during placement. The Contractor shall maintain the fill section in a satisfactory condition at all times until final completion and acceptance of the work as specified in SECTION 01100: SUPPLEMENTARY SPECIAL CONTRACT REQUIREMENTS, paragraph, FINAL EXAMINATION AND ACCEPTANCE OF BEACH FILL.

3.7.2.4 Temporary Safety Fencing

Before any pumping or discharging of beach fill material can occur, the Contractor shall furnish and erect temporary safety fencing at a distance

of 500 feet on either side of the discharge point for the beach fill placement. The temporary safety fencing shall totally encompass the general area around the discharge point for beach fill and shall be moved along the beach in conjunction with the location of the discharge point.

The intent of the safety fencing is to restrict and limit the public access to and around the general area of the discharge point. The temporary safety fencing shall be a high visibility orange colored, high density polyethylene grid or approved equal, a minimum of 42 inches high, supported and tightly secured to steel posts located on maximum 10 foot centers. The safety fencing shall be maintained by the Contractor during the life of the contract and, upon completion and acceptance of the beach fill work, shall become the property of the Contractor and shall be removed from the work site.

3.7.2.5 Temporary Warning Signs

Before any pumping or discharging of beach fill material can occur, the Contractor shall furnish and erect temporary warning signs along and around the outside perimeter of the temporary safety fencing. One temporary warning sign shall be placed along each side of the temporary safety fencing and for each direction accessible to the public. The temporary warning sign shall be moved along the beach in conjunction with the location of the discharge point and the temporary safety fencing. The intent of the warning signs is to warn the public of the hazards and danger of the beach filling operations, construction equipment, and the discharge point. The signs shall be fabricated using 3/4", Douglas Fir, Exterior Marine-Grade, HDO plywood with 4"x4"x12' treated, No. 2 Southern Pine posts installed in 3 feet deep by 12-inch diameter holes backfilled with compacted soil. Sign faces shall be non-reflective vinyl. All letters and logos shall be die-cut or computer-cut. Letter and logo sizes and application to the plywood panel shall conform to the graphic format shown in the U.S. Army Corps of Engineers Signs Standard Manual. The Communications Red panel on the left side of the construction project sign, with Corps logo (reverse version), shall be screen printed onto the white background. Copies of the sign standards manual can be obtained from the Contracting Officer for specific fabrication and installation requirements.

Legends and logos for the temporary warning signs shall be as shown on Attachment 3. No direct payment will be made for the warning signs. The warning signs shall be maintained by the Contractor during the life of the contract and, upon completion and acceptance of the beach fill work, shall become the property of the Contractor and shall be removed from the work site.

3.7.2.6 Construction Stakes

The Contractor shall remove in their entirety all construction stakes, ranges, and other devices utilized to delineate and construct the beach fill section. All fill grade stakes shall be steel pipe approved by the Contracting Officer which shall be completely removed prior to final acceptance of the beach fill. The Contractor shall be responsible for locating and removing such stakes using a magnetometer or other suitable means at no additional expense to the Government.

3.7.3 Pipeline Route

3.7.3.1 General

The dredged material to be placed on the beaches must be transported over routes that may include public property, navigable and unnavigable water, and under fishing piers. Local authorities will acquire and furnish all

permits, rights-of-way or easements required for the areas shown or specified in which the beach fill is to be placed. Prior to installing the pipeline, the Contractor shall devise a specific pipeline route that will be used and obtain the written approval for the specific pipeline route from the Contracting Officer. The pipeline route shall be devised so as to minimize adverse impacts on vegetation, wildlife, dunes and beach traffic. No road crossings are anticipated for this contract. No pipeline will be placed or stored on the beach seaward of the dune prior to November 16, 2003; except, a submerged pipeline may be landed perpendicular to the beach prior to that date. No work or equipment will be allowed on the beach at any time within 50 feet of a sea turtle nest that has not hatched. All hatching will occur by November 16, 2003. Piping may be stored landward of the dunes in public access with approval of city officials.

3.7.3.2 Dune Crossings

It is the intent of these specifications to minimize the damage to the dunes and vegetation thereon. The Contractor shall exercise extreme care in placing the pipeline across the dunes to the beach, should it become necessary for the pipeline to cross existing dunes. The designated routes shall be followed to the extent practicable and in no case will deviations be made without the written approval of the Contracting Officer. The Contractor will not be allowed to grade, or otherwise disturb the natural dunes. Equipment used in placing and removal of the pipeline shall meet the approval of the Contracting Officer.

Any degradation of the dune area caused by the Contractor's operation shall be restored as near as practicable to the natural condition.

3.7.3.3 Pedestrian Access

The pipeline shall be covered with sand at the Public Beach Access points in each of the completed sections in such a manner so as to allow beach users unobstructed access to the completed beach fill section. The pedestrian access points shall be removed and graded to the final cross section upon the completion of the beach fill.

3.7.3.4 Pipeline Leakage

A tight dredge discharge pipeline shall be maintained along all sections of the pipeline to prevent spilling of dredged effluent outside of the beach fill section or stockpiling area. To minimize damage caused by leaks in the pipeline on the land section of the line, the Contractor shall provide a periodic patrol of the pipeline. A minimum of 12 daily inspections shall be made by the Contractor during disposal operations (four (4) inspections each 8-hour shift). The Contractor shall burlap and strap weld all joints of shore sections of pipeline. When significant leaks occur in the pipe line which can cause erosion of the existing beach or a completed beach fill section and/or appears to be a safety hazard to the public, the Contractor shall immediately cease pumping operations until the pipeline is repaired.

3.7.3.5 Booster Pumps

In the event booster pumps are required along the dredge pipeline, they shall be located so as to minimize the disturbance of residents. The location of all booster pumps shall be approved in advance by the Contracting Officer.

3.7.4 Tolerances

A vertical tolerance of five-tenths (0.5) of one foot above and five-tenths

(0.5) of one foot below the prescribed berm grade and slopes, at and above the top of berm elevation line as shown on the drawings, will be permitted in the finished surface. Below the top of berm elevation line, the fill material will be allowed to assume its natural slope as directed by wave and water level conditions. Any material placed outside the prescribed tolerances may be left in place at the discretion of the Contracting officer; however, the Contractor will not be paid for the material placed outside the prescribed tolerances. The Contractor shall be required to redistribute and/or reshape any material placed outside the prescribed tolerances to conform to the requirements of the contract.

3.8 SUBMERGED PIPELINE

In the event the Contractor elects to submerge his pipeline, the location of the submerged pipeline shall be marked with signs, buoys, flags, and lights conforming to U.S. Coast Guard regulations and to the complete satisfaction of the Contracting Officer.

3.9 DREDGING LIMITS

All dredging shall be confined to within the area and depth limits shown. Dredging shall be regulated and controlled so that bank sloughing in the inlet and borrow area does not occur beyond the limiting lines shown on the drawings. Materials taken from beyond these limits will be deducted from the total amount.

3.10 COMMUNICATIONS

The Contractor shall furnish and maintain a radiotelephone and a cellular phone on the dredge(s) throughout the period of the contract. The plant will not be allowed to begin work until the VHF marine band radio is installed and in good working order and a properly operating cellular phone is on board. The radiotelephone shall be capable of operation from the dredge's main control station and capable of transmitting and receiving on a frequency or frequencies within the 156-162 megahertz band using the classes of emissions designated by the Federal Communications Commission. Continuous radio contact shall be maintained between the dredge control room and the inspectors of the beach fill areas as well as the personnel patrolling the pipeline.

3.11 MEASUREMENT AND PAYMENT

3.11.1 General

The total volume of all material removed and to be paid for under this contract will be measured by the cubic yards in place, by computing the volume between the bottom surface shown by soundings of a survey before dredging each acceptance section and the bottom surface shown by the soundings of a survey made as soon as practicable after completion of each acceptance section. The calculations will exclude any volume of material removed from beyond the limits of the side-slopes and/or below the allowable overdepth and will be further reduced by the volume of any misplaced material. All pay quantities shall be determined from before and after dredging surveys conducted by the Government. All work connected with excavation, transportation, placing, and shaping of the beach fill, controlling and confining the dredge effluent, surveys for layout and control of the dredging work surveys described in SECTION 01100: SUPPLEMENTARY SPECIAL CONTRACT REQUIREMENTS, paragraph, BEACH SURVEYS AND SURVEY PERSONNEL, and repairs and inspections shall be included in the contract price for dredging.

3.11.2 Contract Drawings

The drawings referred to in SECTION 01100, paragraph, CONTRACT DRAWINGS AND SPECIFICATIONS, are believed to represent the conditions existing on the dates of survey. The bottom conditions will be determined by before dredging surveys of each acceptance section prior to commencement of dredging and new maps will be furnished to the Contractor. Determination of quantities removed and the deductions made therefrom to determine quantities by in-place measurement to be paid for in the areas specified, after having once been made, will not be reopened, except on evidence of collusion, fraud, or obvious error.

3.11.3 Payments

Payment shall be made upon satisfactory completion of acceptance sections.

3.11.4 Method of Survey

Class 1 Hydrographic surveys with associated tidal control, as specified in the U.S. Army Corps of Engineers, latest Publication Number (EM 1110-2-1003, Engineering and Design - Hydrographic Surveying), will be accomplished by the Government with the use an automated hydrographic surveying system installed aboard one of the Wilmington District's survey vessels. Horizontal location of survey lines and depth sounding points will be determined by the use of Real Time Kinematic (RTK) differentially corrected GPS (DGPS). Depth soundings as depicted on the Baldhead Shoal Channel plans were obtained using a single beam echo sounder/digitizing system operating at 28 kHz. The echo sounder system will be calibrated at the job site suing the "bar check" method and verified for accuracy twice daily. Position and depth data will be collected and stored on magnetic media for subsequent processing by the Government for map presentation and quantity calculations.

3.11.5 Survey Lines

Data will be secured by running survey lines parallel to the longitudinal axis of the channel. A sufficient number of lines will be run to assure good coverage of the bottom. A minimum of two (2) lines will be run within the grade slopes. If longitudinal lines are run, additional lines shall be required along the side slopes. The after dredging surveys will be performed in the same manner as the before dredging surveys. Multi-beam surveys may, however, also be used in the acceptance process. Weather permitting, before and after dredge surveys will be made during the same tidal stage.

3.11.6 Misplaced Material

No payment shall be made for any material placed outside of the tolerances of the typical beach section unless otherwise authorized. The Contractor shall be required to redistribute any misplaced material in the beach fill placement areas in order to conform with the typical beach section and tolerances given in the contract and shall be accomplished at his own expense.

3.12 COMPLIANCE WITH APPLICABLE NAVIGATION RULES AND REGULATIONS, MARINE EQUIPMENT

The Contractor shall ascertain that all vessels used in performance of this contract are commanded, equipped, navigated and/or operated in strict compliance with the general regulations of the Department of the Army and the U.S. Coast Guard, including but not limited to, applicable safety, environmental, and navigational rules and regulations in the code of Federal Regulations (CFR) Parts 33 and 46.

Installation (i.e., pipeline, pipeline risers and/or booster stations) as may be placed by the Contractor on or over the seabed of the work area are obstructions or structures in accordance with Title 33 CFR SUBPART 67.01. Such installations or portions thereof, are subject to applicable regulations set forth in Title 33 CFR, parts 64, 66 and 67. The responsibility for notifying the Commander, Fifth Coast Guard District, per Title 33 CFR SUBPART 67.40 and the responsibility of securing necessary installation approvals therefrom, rests with the Contractor. The further responsibility for maintaining and operating his/her job site installation and vessels in accordance with applicable laws also rests with the Contractor.

The Government will not undertake to keep the area free from vessels or other obstructions, except to the extent of such regulations, if any, as may be prescribed by the Secretary of the Army, in accordance with the provisions of Section 7 of the River and Harbor Act approved 8 August 1917. The Contractor will be required to conduct the work in such a manner as to obstruct navigation as little as possible, and in case the Contractor's plant so obstructs navigation as to make it difficult or endanger the passage of vessels, said plant shall be promptly moved on the approach of any vessel to such an extent as may be necessary to afford a practicable passage. Upon completion of the work the Contractor shall promptly remove his plant, including ranges, buoys, piles and other markers placed by him under the contract in navigable waters or on the shore.

3.13 FLOATING PLANT INSPECTION AND CERTIFICATION

All floating plant regulated by the U.S. Coast Guard (USCG) shall have current inspections and certificates issued by the USCG before being placed in service and a copy shall be posted in a public area on board the vessel.
A copy of any USCG Form 835 issued to the vessel in the preceding year shall be onboard the vessel and shall be available to the Contracting officer upon request.

All dredges and quarter boats not subject to USCG inspection and certification or not having a current American Bureau of Shipping (ABS) classification shall be inspected in the working mode annually by a marine surveyor accredited by the National Association of Marine Surveyors (NAMS) or the Society of Accredited Marine Surveyors (SAMS) and having at least five years experience in commercial marine plant and equipment. All other plant shall be inspected annually by a qualified person. The inspection shall be documented, and a copy of the most recent inspection report shall be posted in a public area on board the vessel and a copy shall be furnished to the Contracting officer upon request. The inspection shall be appropriate for the intended use of the plant and shall, as a minimum, evaluate structural integrity and compliance with NFPA 302, Fire Protection Standard for Pleasure and Commercial Motor Craft.

The hydraulic pipeline dredge shall be ocean certified. The Contractor shall provide a tug at the work site for the duration of the contract capable of moving the hydraulic pipeline dredge to a safe area in the event of severe weather.

3.14 REPORTING REQUIREMENT

The Contractor will be required to prepare daily a "Report of Operations" (Attachment 3 and Attachment 4 of Section 01451) and furnish copies thereof to the Contracting Officer. The contractor shall furnish daily a copy or copies of any Contractor forms or operational reports he routinely requires to be submitted by his field personnel.

Beach survey field notes and computations shall be furnished to the Contracting Officer in advance of placement of the beachfill so that control of the quantities and adjustment to the fill section may be made if necessary.

3.15 FENDER TIRES

All fender tires used on Contractor dredging equipment or vessels shall be permanently marked by the Contractor with the company name and equipment plant name. All fender tires shall be securely attached to prevent them from falling overboard. The Contractor shall be responsible for damages to fishing nets or other claims that are due to any loss of equipment such as fenders, cables, anchors, pipe, etc.

3.16 HOPPER DREDGE EQUIPMENT

Hopper dredge drag heads shall be equipped with rigid sea turtle deflectors that are rigidly attached. No dredging shall be performed by a hopper dredge without a turtle deflector device that has been approved by the Contracting Officer.

3.16.1 Deflector Design

The leading vee-shaped portion of the deflector shall have an included angle of less than 90 degrees. Internal reinforcement shall be installed in the deflector to prevent structural failure of the device. The leading edge of the deflector shall be designed to have a plowing effect of at least 6" depth when the drag head is being operated. Appropriate instrumentation or indicator shall be used and kept in proper calibration to insure the critical "approach angle."

(Information Only Note: The design "approach angle" or the angle of lower drag head pipe relative to the average sediment plane is very important to the proper operation of a deflector. If the lower drag head pipe angle in actual dredging conditions varies tremendously from the design angle of approach used in the development of the deflector, the 6" plowing effect does not occur. Therefore, every effort should be made to insure this design "approach angle" is maintained with the lower drag pipe.)

If adjustable depth deflectors are installed, they shall be rigidly attached to the drag head using either a hinged aft attachment point or an aft trunnion attachment point in association with an adjustable pin front attachment point or cable front attachment point with a stop set to obtain the 6" plowing effect. This arrangement allows fine-tuning the 6" plowing effect for varying depths. After the deflector is properly adjusted there shall be NO openings between the deflector and the drag head that are more than 4" by 4".

3.16.2 Inflow Basket Design

The Contractor shall install baskets or screening over the hopper inflow(s) with no greater than 4" x 4" openings. The method selected shall depend on the construction of the dredge used and shall be approved by the Contracting Officer's Representative prior to commencement of dredging. The screening shall provide 100% screening of the hopper inflow(s). The screens and/or baskets shall remain in place throughout the work.

The Contractor shall install and maintain floodlights suitable for illumination of the baskets or screening to allow the observer to safely monitor the hopper basket(s) during non-daylight hours or other periods of poor visibility. Safe access shall be provided to the inflow baskets or

screens to allow the observer to inspect for turtles and sturgeons, or parts thereof, and clean the baskets or screens for the next loading cycle. The inflow screens shall be maintained in operational condition throughout the period of their required use.

3.16.3 Hopper Dredge Operation

The Contractor shall operate the hopper dredge to minimize the possibility of taking sea turtles.

When initiating dredging, suction through the dragheads shall be allowed just long enough to prime the pumps, then the dragheads must be placed firmly on the bottom. When lifting the dragheads from the bottom, suction through the dragheads shall be allowed just long enough to clear the lines, and them must cease. Pumping water through the dragheads shall cease while maneuvering or during travel to/from the disposal area.

(Information Only Note: Optimal suction pipe densities and velocities occur when the deflector is operated properly. If the required dredging section includes compacted fine sands or stiff clays, a properly configured arrangement of teeth may enhance dredge efficiency which reduces total dredging hours and "turtle takes." The operation of a drag head with teeth must be monitored for each dredged section to insure that excessive material is not forced into the suction line. When excess high-density material enters the suction line, suction velocities drop to extremely low levels causing conditions for plugging of the suction pipe. Dredge operators should configure and operate their equipment to eliminate all low level suction velocities. Pipe plugging in the past was easily corrected when low suction velocities occurred by raising the drag head off the bottom until the suction velocities increased to an appropriate level. Arrangements of teeth and/or the reconfiguration of teeth should be made during the dredging process to optimize the suction velocities.)

Raising the drag head off the bottom to increase suction velocities is not acceptable. The primary adjustment for providing additional mixing water to the suction line should be through water ports. To insure that suction velocities do not drop below appropriate levels, the Contractor's personnel shall monitor production meters throughout the job and adjust primarily the number and opening sizes of water ports. Water port openings on top of the drag head or on raised stand pipes above the drag head shall be screened before they are utilized on the dredging project. If a dredge section includes sandy shoals on one end of a tract line and mud sediments on the other end of the tract line, the Contractor shall adjust the equipment to eliminate drag head pick-ups to clear the suction line.

Near the completion of each payment section, the Contractor shall perform sufficient surveys to accurately depict those portions of the acceptance section requiring cleanup. The Contractor shall keep the drag head buried a minimum of 6 inches in the sediment at all times. Although the over depth prism is not the required dredging prism, the Contractor shall achieve the required prism by removing the material from the allowable over depth prism.

During turning operations the pumps must either be shut off or reduced in speed to the point where no suction velocity or vacuum exists.

These operational procedures are intended to stress the importance of balancing the suction pipe densities and velocities in order to keep from taking sea turtles.

The Contractor must comply with all requirements of this specification and the Contractor's accepted Environmental Protection Plan. The contents of this specification and the Contractor's Environmental Protection Plan shall

be shared with all applicable crew members of the hopper dredge.

3.17 WATER POLLUTION CONTROL

3.17.1 Contamination of Water

The Contractor shall not pollute the channels or beach fill area with paints, fuels, oil, bitumens, calcium chloride, insecticides, herbicides, or any other substance which may be considered harmful to fish, shellfish, or wildlife. It is the responsibility of the Contractor to investigate and comply with all applicable Federal, State, County, and municipal laws concerning pollution of rivers and streams and health protection of shellfish, fish, and domestic animals.

3.17.2 Disposal of Materials

The methods and locations of disposal of materials, wastes, effluents, trash, garbage, oil, grease, chemicals, etc., shall be such that harmful agents will not enter the waterway, ocean, and sound by erosion and shall be subject to approval by the Contracting Officer.

3.18 EMERGENCY DUMPS

If a vessel experiences an emergency situation which causes a dumping of material outside of the designated disposal zones, the Contractor shall verbally notify the Contracting officer no later than the next work day. The Contractor must submit, in writing within two (2) days of the emergency dump, a statement detailing time of dump, location of dump, and reason dump occurred. Material that is misplaced due to an emergency dump situation is subject to removal by the Contractor at his own expense upon the request of the Contracting Officer.

3.19 DISPOSAL OF EXCAVATED MATERIAL (WILMINGTON HARBOR)

(a) The material excavated shall be placed in the disposal area(s) as shown on the contract drawings.

(b) New Wilmington Ocean Dredged Material Disposal Site. Disposal of excavated material in the new Wilmington Ocean Dredged Material Disposal Site (ODMDS) shall be within the designated disposal zone shown on the drawings. Disposal shall be conducted in such a manner that water above the dumped material will have a minimum clearance of 30 feet at mean lower low water (MLLW). In order to maximize ODMDS capacity and minimize mounding of material, the dumps shall be scattered throughout the designated disposal zone and not placed repeatedly at one location. This shall be accomplished by dividing the disposal zone into quadrants and placing successive dump loads into successive quadrants. The Contracting Officer can direct the placement of material within any portion of the disposal zone.

(c) Any material that is deposited other than in places designated or approved by the Contracting Officer will not be paid for, and the Contractor will be required to remove such misplaced material and deposit it where directed at his expense.

(d) Mechanical Dredging. Material shall be excavated by bucket and placed in scows and transported to the approved disposal area where the scows shall be unloaded. No screens are required. All scows shall be kept in good condition and coamings kept in good repair. Dumps scows shall have their pockets provided with proper doors or appliances to prevent leakage of material. All scows shall be equipped with a radio controlled dump mechanism.

(e) Hopper Dredge. Inflow baskets or screens over the hopper inflow(s) shall be maintained in operational condition throughout the period of work. Debris shall be cleaned from the baskets or screens and disposed of in accordance with subparagraph, Debris Disposal, below.

(f) All disposal vessels shall be equipped with draft measurement and recording devices. The draft of the vessels will be constantly updated throughout the entire cycle. The data will be transmitted by. radio to the tug and simultaneously recorded and included in the Contractor's daily report.

(g) All material must be released in the designated ocean disposal area. This disposal area, as well as the dump buoy and route to be followed from the site of work to the disposal area, is shown on the contract drawings.

(h) Debris Disposal. The Contractor may encounter wood and other debris within the dredging limits. The wooden debris may consist of tree trunks, stumps, roots, and limbs. Debris is to be placed in a separate barge of conveyance and disposed of in a public or private upland disposal area. Bidders are expected to investigate the cost and availability of disposal areas and any restrictions associated with each, prior to submitting their bids. Any costs associated with disposal of debris is the responsibility of the Contractor and shall be included in the contract unit price for dredging. Debris other than wood may be disposed of in new ODMDS.

3.20 TIDE DATA

3.20.1 Real Time Kinematic (RTK) GPS

Real Time Kinematic (RTK) GPS will be used by the Corps of Engineers to determine real time water levels (tide corrections) in the Wilmington Harbor Project. If the Contractor desires to obtain these corrections, he will be responsible for providing navigation equipment capable of utilizing the transmitted signals from the Corps-owned RTK GPS base station at the Oak Island Lighthouse located on Oak Island. Radio frequencies and information on the Corps-owned equipment can be obtained from Mr. Marc Reavis at (910 251-4489). Corps personnel will instruct the contractor as to the proper use of this system.

3.20.2 Kinematic Tidal Datum

A file listing the separations between the Reference Ellipsoid and the Chart Datum (Mean Lower Low Water) will be provided to the Contractor for entry into the hydrographic survey software. A Tidal Datum Diagram showing the relationship between NAVD 88 and Mean Lower Low Water will be provided upon request.

3.20.3 Non-Operational Reference Station

In the event that the reference station becomes non-operational, the Contractor shall contact Mr. Marc Reavis at the telephone number shown above. The Government will take measures to ensure correction of any problems with the GPS equipment.

3.21 SURFACE TRANSPORT OF DREDGED MATERIAL

a. Transportation of dredged material by barges and scows to the new Ocean Dredged Material Disposal Site (ODMDS) disposal zone will be allowed for this contract. All disposal vessels shall be equipped with draft and position measuring and recording devices. These instruments shall be kept in good working order. Vessel draft and vessel position data

shall be obtained and recorded in accordance with paragraph, OCEAN DISPOSAL VERIFICATION.

b. All scows shall be kept in good condition and the coamings kept in good repair. All scows shall have their pockets provided with proper doors or appliances to prevent leakage of material. Failure to repair leaks will result in suspension of dredging. If suspension occurs, dredging will not be allowed to resume until the Contractor has promptly repaired the scow to the satisfaction of the Contracting Officer. Overflow of scows to obtain an economic load will be allowed. All scows shall be equipped with radio control dump mechanisms.

3.22 HAWSER LENGTH

The Contractor shall be required to document the length of cable or hawser released during the tow of each scow or barge to the disposal site. The distance between the scow and the towing vessel shall be noted for each disposal event and made a part of the daily report of operations. A digital compass shall be used to provide an azimuth to the scow.

3.23 OCEAN DISPOSAL VERIFICATION

3.23.1 Hopper Dredge, Barge, or Scow

(a) The Contractor shall prepare and operate under an approved ocean disposal verification plan. This plan shall include an automated system that will record the horizontal location and draft condition of the disposal vessel or scow from the time dredging ceases and the transit to the disposal area begins until dredging begins again. Vessel positioning as a minimum shall use either a microwave line-of-sight system or differential global positioning. Required digital data to be collected and recorded for each load is as follows:

(1) Sequential load number

(2) Date

(3) Time, disposal vessel position, and draft in one (1) minute intervals for the disposal cycle specified previously, positioning in North Carolina State Plane Coordinates, draft in feet.

(4) Begin and end dump event times and positions

(b) This data shall be maintained by the Contractor and made available to the Contracting Officer's Representative upon request, in ASCII digital format on a 3.5 inch, 1.44 MB diskette or other format agreed to by the Contracting Officer.

(c) To document that dredged material is being appropriately placed within the disposal area, the Contractor shall provide a track plot for each days event. The interval of events actually plotted or listed herein may be adjusted for clarity after coordination and agreement by the Contracting Officer's Representative. The track plot must indicate the start and stop dump times. These records shall be submitted in a complete, neat and orderly manner on a daily basis to the Contracting Officer's Representative.

(d) The Contractor shall also maintain a manually documented dump event log on the form provided or equivalent agreed upon by the Contracting Officer. This log shall contain the following and be submitted, on a daily basis to the Contractor's Officer's Representative.

(1) Sequential load number

(2) Scow or disposal number (or name)

(3) Date

(4) End dump event time and state plane coordinates

(e) The Contractor shall maintain an electronic spreadsheet data record of the ocean dumping project information. The spreadsheet shall be prepared in a form readily exportable to Microsoft Excel 5.0 and shall be similar to the sample form provided in Attachment 1. The spreadsheet shall contain the following:

(1) Vessel Name

(2) Sequential Load Number

(3) Date (month/date/year)

(4) Start Dump Time (24 hour clock)

(5) Start Dump Position (x position NC State Plane Coordinate)

(6) Start Dump Position (y position NC State Plane Coordinate)

(7) Observed depth at dump location

(8) Responsible party on watch

(9) Estimated quantity in load (cy) (10) Dredging range or location

(f) This spreadsheet shall be updated and submitted weekly in digital (electronic file) format to the Contracting Officer. The dump positions reported in the spreadsheet shall come from the silent inspector (Automated Navigation Recording).

(g) The verification plan shall be in operation throughout the project. The Contractor shall provide an example of the ocean disposal verification submittals prior to the disposal of the first load. If for any reason the verification data devices stop functioning, they shall be repaired or replaced immediately upon return to the work site. No vessel shall leave for the disposal site without the ability to collect and record the ocean disposal verification data specified. Material placed without the specified verification data shall be considered misplaced materials under this contract.

(h) Horizontal location shall have an accuracy equal to or better than _+10 feet (horizontal repeatability). Vertical data (draft) shall have an accuracy of _+1/2 foot. Horizontal and vertical data shall be collected in sets and each data set shall be referenced to local date and time (to the nearest minute) and shall be referenced to the same geographic reference system used for the survey(s) shown in the contract drawings.

3.23.2 Pipeline Dredge

If a pipeline dredge is used to pump dredged material to the new Ocean Dredged Material Disposal Site (ODMDS), the Contractor shall maintain an electronic spreadsheet data record of dredging and disposal information. The spreadsheet shall be prepared in a form readily exportable to Microsoft Excel 5.0 and be similar to the sample form provided in Attachment 2. The spreadsheet shall contain the following:

1. Dredge Name

2. Date (Month/day/year)

3. Hour of record (in 1 hour intervals)

4. Dredging this hour (yes/no)

5. Pipeline discharge position (x position NC State Plane Coordinate)

6. Pipeline discharge position (y position NC State Plane Coordinate)

7. Estimated discharge (pump) time for prior hour (minutes)

8. Dredging range or location

9. Responsible party on watch

This spreadsheet shall be maintained and submitted weekly in digital (electronic file) format to the Contracting Officer.

3.24 SITE SPECIFIC INFORMATION

3.24.1 Geology and Character of Materials

3.24.1.1 Subsurface Data

Subsurface and laboratory data are presented in Volume II, Appendices A and B. Boring and probe locations are shown on the drawings.

3.24.1.2 Drilling Logs

Drilling logs of borings applicable to the subsurface investigation of the project site are provided in Appendix A. Drilling logs of other borings in the vicinity of the project site not provided in Appendix A are available upon request, as indicated on SF 1442, block 9.

Drilling logs data are representative of subsurface conditions at their respective locations and for their respective vertical range of drilled depth, local variations in the subsurface materials are to be expected and, if encountered, will not be considered as being materially different within the purview of FAR 52.236-2, Differing Site Conditions of the contract.

In the drilling logs the soil and top of rock contact (Top of Rock) is determined by splitspoon refusal and geologic criteria. Splitspoon refusal is that point in which a splitspoon does not penetrate a foot of material with one hundred blows of the 140-pound hammer falling 30-inches, and geologically, the material is not Recent age alluvium, is in situ, and at some point in time had been or is indurated. In other borings top of rock may be tentatively defined (Assumed Top of Rock) by fishtail bit refusal or jet probe refusal. Fishtail bit refusal is the point that, while drilling, overburden material resistance to drilling action stresses the drilling equipment, drilling penetration rate decreases, and to continue drilling with the fishtail bit could cause damage to the bit, rods, or drill rig. Jet probe refusal is that point in which the advancement of an opened end string of drill rods being jetted down with water encounters a solid resistance and upon bouncing the end of the rods on the resistant material produces the sound and vibration interpreted by geotechnical technicians or professionals as steel striking indurated material and lacking physical

characteristics associated with soils.

3.24.1.3 Sieve Analyses

Sieve analyses of selected soil samples are provided in Appendix B. Visual classifications based on the sieve data are included on the gradation form.

3.24.1.4 Excavated Materials

The majority of the material to be excavated is described in subparagraph Site Geology and Soils. The material varies in sand and shell content dependent upon location. Refer to the drilling logs and the laboratory sieve data. Although there was extensive sampling done some variations in materials may exist.

3.24.2 General Geology

3.24.2.1 Physiographic Province

The project site is in the Coastal Plain Physiographic Province (Coastal Plain) of the Eastern United States. The Coastal Plain is composed of sand, gravel, clay, and/or silt or admixtures of these sediments, which range from unconsolidated to various stages of induration, and poorly to well cemented carbonate and other sedimentary rock. The Coastal Plain deposition is wedge-shaped with the thin edge in the west overlying the eastern Piedmont Physiographic Province and the thickened edge in the east covered by the Atlantic Ocean. This Coastal Plain deposition overlies crystalline basement rock. In the Cape Fear area the depth to crystalline basement rock is approximately 1,500 feet.

3.24.2.2 Geomorphology

The historical geological development of the Cape Fear area includes cycles of erosion and deposition, transgressions and regressions of the antediluvian ocean, and the evolution of the Cape Fear River. During the geomorphological development of the area, sediments were deposited and then all or portions of the deposition may have been removed or scoured by transgressions and regressions of the ocean or the meandering developing Cape Fear River. Subsequently, these scoured areas or channels may have been filled in with younger material. Some of this material may have been indurated while other remained soil-like in character. As the Cape Fear River meandered across the area depositing and eroding sediments and rock, it developed and abandoned river channels through geologic time. The combined geologic processes produced irregular rock surfaces of the geologic formations underlying the ocean sediments in the project area. The primary area of deposition of the sediments carried by the Cape Fear River was and is in the vicinity of the mouth of the river. Recent alluvium overlies geologically older sediments and rock.

3.24.2.3 Area Distribution of the Rock Surface

With respect to the existing Baldhead Shoal Channel, the rock surface is approximately at elevation -70 feet Mean Lower Low Water (or -70 MLLW) at existing station 0+00 to about existing station 125+00 where the rock surface begins to rise to about elevation -38 MLLW to about exiting station 305+00. Seaward of existing station 305+00, the elevation of the rock surface varies. Southeast of the existing Baldhead Shoal Channel, the rock surface begins to dip toward the southeast. The rock surface dips consistently in such a fashion that a northeast-southwest trend is delineated. It is thought this depression or trough is the result of a buried channel incised by the Cape Fear River in the geologic past. The new alignment of Baldhead Shoal Channel is located on the northwestern side of

the trough.

3.24.3 Site Geology and Soils

3.24.3.1 Rock

Rock types encountered in borings in the Baldhead Shoal Channel area consist of predominantly mudstone and limestone of Paleocene to Eocene age. The respective types of rocks may be silty, calcareous, dolomitic, or sandy. The limestone, in places, is fossiliferous. Rock encountered in borings in the project area varied from poorly to well cemented. The geomorphological development of the area generally produced lithologies having uncomformable contacts. When well cemented rock was encountered in borings, it was in or in the vicinity of the uncomformable contacts. Rock was encountered in borings at elevations as described in the drilling logs. Pinnacles of rock may exist in the area. Description of rock encountered in borings in Baldhead Shoal Channel area are on drilling logs in Appendix A.

3.24.3.2 Soils

The types of materials that are to be excavated from the channels are described on the drilling logs in Appendix A. These types of materials are comprised of predominantly alluvium and geologically older sediments. In the drilling logs the alluvium and older sediments are not differentiated by age or origin. The soils present consist of inorganic silts (ML & MH), inorganic clays (CL & CH), silty sand (SM), poorly graded sand (SP), poorly graded silty sand (SP-SM), clayey sand (SC), and organic silts and clays (OH). Wood, cemented sand, silt and clay, and well cemented rock with high compressive strength may also be encountered.

3.24.3.3 Geologic Formations

From oldest to youngest the geologic formations consist of the Yaupon Beach Formation (formerly called Olive Sand), Bald Head Shoals Formation (formerly called Turritellid Limestone), Castle Hayne Limestone (Unit A), Castle Hayne Limestone (Unit B), and the Waccamaw Formation. General descriptions of the geologic formations of the project area are from Harris, W. B. and Laws, R. A., 1994, "Paleocene Sediments on the Axis of the Cape Fear Arch, Long Bay, North Carolina," Southeastern Geology, V.34, No.4, p. 185-199.

3.24.3.4 Yaupon Beach Formation (Paleocene)

This formation is "predominantly comprised of an olive green to gray, glauconitic, very fine to fine-grained slightly silty bioturbated quartz sand."

3.24.3.5 Bald Head Shoals Formation (Paleocene)

The Bald Head Shoals Formation is "medium to dark gray, sandy molluscan-mold mudstone, wackestone, to packstone." Characteristic of its composition is turritellid gastropod molds.

3.24.3.6 Castle Hayne Limestone Formation, Unit A (Middle Eocene)

Unit A usually is a "well-indurated, cross-bedded, bryozoan limestone."

3.24.3.7 Castle Hayne Limestone Formation, Unit B (Upper/Middle Eocene)

Unit B is generally "fossiliferous with some gravel size brachiopods, sand dollars, and pelecypod fossils. Some lenses of medium grained limestone similar in appearance to that found in Unit A occurs but is poorly

lithified or unlithified and is not cross-bedded."

3.24.3.8 Waccamaw Formation

This unit consists of fossiliferous, phosphatic, calcareous quartz sand. This material is tentatively identified as Waccamaw Formation.

3.25 DISPOSAL OF MATERIAL ON BIRD ISLANDS

Disposal of material on Ferry Slip and South Pelican Islands shall be in strict accordance with conditions of the permits for disposal on these islands in Section 01355 and the conditions described on the drawings. Dredged material not able to be placed on bird islands will be disposed of in Disposal Area No. 4 shown on drawings. Contractor shall submit a work plan that complies with the permits and drawings and minimizes scouring. Work plan shall define the following:

(1) size of dredge pipe;

(2) flow rate of disposal material; and

(3) controls and best management practices to be used.

3.26 QUALITY CONTROL

The Contractor shall establish and maintain quality control for the berm work and all other operations in connection therewith to assure compliance with contract requirements. The Contractor shall inspect for compliance with contract requirements and record the inspection of all operations including but not limited to the following:

The fill material is placed within the tolerances secified.

Dredging is confined within the limits of the designated channel.

The dredge effluent does not flow landward of the fill section or other limits established by the Contracting Officer.

Damage to the existing berm and dune is held to the minimum possible.

Adequate control is provided to prevent unnecessary loss of material by seaward flow of pipeline effluent.

The pipeline is periodically inspected for leakage as specified.

All joints of pipe for discharge line are tight and sound.

Plan addressing the use and removal of construction stakes. The plan shall include the proposed material to be used for the construction stakes and a proposed accounting method for inventorying the stakes. A daily log of those stakes deployed and removed shall be maintained by the Contractor and submitted to the Contracting Officer.

A copy of these quality control records, as well as the records of corrective action taken will be furnished the Government as directed by the Contracting Officer.

-- End of Section --

TABLE 1

ESTIMATED BEACH-FILL QUANTITIES FOR BALDHEAD ISLAND SOUTH BEACH

Table 1 - Estimated Beach Fill Quantities for Bald Head Island South Beach

Baseline STA		In Place Fill Volume (CY)			Borrow Area Measure (CY)	
		Incremental Volume	Cumulative Volume		Incremental Volume	Cumulative Volume
51+00		0	0		0	0
52+00		971	971		1,214	1,214
56+00		17,756	18,727		22,195	23,409
60+00		29,240	47,967		36,550	59,959
64+00		31,536	79,503		39,420	99,379
68+00		29,153	108,656		36,441	135,820
72+00		30,721	139,377		38,401	174,221
76+00		37,702	177,079		47,128	221,349
80+00		40,136	217,215		50,170	271,519
84+00		37,299	254,514		46,624	318,143
88+00		36,335	290,849		45,419	363,561
92+00		34,396	325,245		42,995	406,556
96+00		31,628	356,873		39,535	446,091
100+00		30,247	387,120		37,809	483,900
104+00		25,822	412,942		32,278	516,178
108+00		24,832	437,774		31,040	547,218
112+00		27,895	465,669		34,869	582,086
116+00		27,696	493,365		34,620	616,706
120+00		25,032	518,397		31,290	647,996
124+00		29,642	548,039		37,053	685,049
128+00		33,257	581,296		41,571	726,620
132+00		31,071	612,367		38,839	765,459
136+00		30,004	642,371		37,505	802,964
140+00		31,500	673,871		39,375	842,339
144+00		30,816	704,687		38,520	880,859
148+00		19,193	723,880		23,991	904,850
149+00		1,775	725,655		2,219	907,069

(Revised by Amendment No. 0001)